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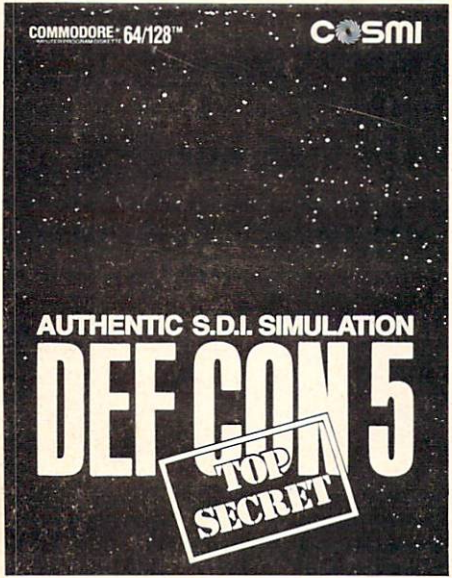

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DEF CON 5

by
Paul Norman

Def Con 5 – a simulation of the Star Wars Defense System, *the ultimate authentic simulation,* demonstrating that however powerful or complicated computer programs become, it is ultimately the human hand and human mind that decides!

GAMES WORTH PLAYING

EXECUTIVE OVERVIEW

Pursuant to DOD (Department of Defense) Directives 31/BMD/A through 37/BMD/L and in keeping with the provisions and constraints of NATO, Salt I-III, and SWAP (Space Weapons Acquisition and Prohibitions) Treaties of 1992, the United Sates has implemented and deployed a limited BMD (Ballistic Missile Defense) System.

The system configuration adheres to the limitations of the 1990 DOD appropriations bill and as such is quantitatively different from original proposals. This "scaled-down" version of the project retains the five-phase "gauntlet" design utilizing ground-based, land-launched and space-based system components. All alterations to the original proposal were made to maximize "upgrade" capability through either redundancy or technological improvements based on future appropriations and/or geopolitical necessity.

In compliance with SWAP, the system as a whole does not, nor does any isolated component, pose any substantial threat to terrestrial properties or activities. All guidelines and restrictions adopted by formal agreements and treaties concerned with space oriented defensive systems have been strictly observed and as such, the system cannot be regarded or utilized as other than a ballistic missile defense and deterrent.

PRINCIPAL OBJECTIVES

The system is designed to destroy, defeat, confound or destabilize ballistic missiles throughout the period beginning approximately one minute into boost phase to approximately three minutes before continental impact.

Given current Soviet Ballistic capability, this constitutes an operational phase duration of approximately twenty minutes.

Result computation of test simulation studies based on single-station control indicates a 40 percent to 60 percent effectiveness in the environment of a full scale Soviet-launched nuclear strike. These results improve proportionately as the assault-size decreases to limited debilitating strategic attack levels.

Non-Soviet-launched attack studies, that infer considerably smaller numbers of warhead incursions, indicate dramatic improvements in result effectiveness up to 100 percent. A non-Soviet ballistic capability is implied as the system has no inherent tactical or conventional forces countermeasure ability. In the absence of aggressions, the system employs two sub-systems -- one for surveillance segment includes satellite networks both dedicated to the system as well as periodic access to existing networks, placed in orbit prior to BMD implementation. Multiple observation stations in single high-earth orbit with variable imaging allows semi-continuous coverage of selected terrestrial areas evaluated as "prime sites". Both the imaging capability and area selection are based on the limited interest of the system-specifically, ballistic missile activity. High altitude, low-resolution coverage, though a design and fiscal compromise, is adequate for the singular requirements of the system.

The protection segment is designed to maximize survivability of the master system within the confines of international agreements regarding ASAT (Anti-Satellite) weapons, space-based offensive systems and enforcement of

negotiated ISM (Immediate Satellite Environment) boundaries, or "keep out zones". Protection is provided by a three component configuration of anti-space mine robots (ASM), decoy deployment detonators (D3), and multi-track thermal target interceptors (MT3I). These are maneuverable elements within the parameters of the orbits of the main system components that they protect to allow realtime position and action assignment due to limited numbers of units and therefore necessary multiple areas of responsibility.

SYSTEMS SUMMARY

1. Ground-based chemical laser (GCL)

   There are six GCL facilities - four in the United States, one in England and one in Australia. The GCL is a directed-energy weapon of high power utilizing a chemical lasant (classified) to generate an intense beam of infrared radiation once every three seconds for a period of one minute. The targeting mechanism can achieve one degree of arc per second.

2. Orbiting laser reflector (OLR)

   Satellites equipped with mirrors to divert directed radiation from terrestrial sources to computed targets back on the earth. There are 24 OLR's distributed in two orbital trajectories to provide a minimum of four targeting satellites within range of the GCL's on a regular period basis.

The advantage of the GCL/OLR combination is predominantly targeting capability. A fixed based laser has few direct targeting options and can easily be outmaneuvered. There are also atmospheric absorption, scattering and turbulence problems confronting direct targeting lasers.

Use of space-based reflectors allows several angles of approach to thwart climatic and atmospheric problems and enemy countermeasures.

3. Free-Election Laser (FEL)

The space-based FEL generates a stream of electrons accelerating at nearly the speed of light that can at minimum disrupt the electronics of a ballistic missile in space or at maximum so disable the missile's internal systems as to cause course failure or even premature detonation. These weapons are evolved from particle accelerator technology and resemble small cyclotrons on orbiting space platforms. There are eight FEL platforms based in space on trajectories that place them over strategic areas within a ten minute margin. FEL's are exoatmospheric weapons and are effective only against missiles that have achieved orbit above the earth's atmosphere (approximately six-seven minutes after launch).

4. Neutral Particle Beam (NPB)

NPB weapons are space-based high-energy accelerators that emit superradiant beams of heavy, electrically neutral particles (only neutral particles can travel a straight path through the earth's magnetic field).

The beams are of intensities sufficient to penetrate even hardened targets and produce a hard kill at ranges of up to 10,000 kilometers. NPB Weapons are also exo-atmospheric, effective only against targets in space. There are six NPB space platforms deployed in a single orbit and are intended as a back-up system to the FEL weapons.

5. Electro-Magnetic Launcher (EML)

The EML, also called a "rail gun", is a super conducting electro-magnet consisting of two copper rails between which is carried a complex projectile, known as a "smart bullet". Powered by instantaneous bursts of energy conducted through the liquid nitrogen-cooled rail assembly, the bullet is "fired" from the gun at a rate of approximately three miles per second. As a kinetic-energy weapon, the EML could effectively destroy missiles with impulsive force. However, to maximize kill-potential, the "smart bullet" is actually a device capable of tracking multiple targets, calculating relative positions and then detonating itself to create a shock wave that destabilizes and, at close range, disables missiles in space. The destabilized missiles are thrown off course, allowing more time for ground-tracking with land-or-sea-launched interceptors. There are sixteen EML's in orbits that place at least four vehicles in range of a midcourse-phase salvo.

6. Nuclear-pulsed X-ray laser (NXL)

The NXL is a land-launched endo-atmospheric device that employs a nuclear explosion as the lasant pump. It is carried atop a standard ballistic missile in place of the warhead assembly. At an altitude of maximum

effectiveness over the continental United States, based on the relative altitudes of incoming ICBM's, and also at an altitude of minimum terrestrial exposure the nuclear component is detonated and in the first billionth of a second before destruction a lethal concentration of x-ray radiation is focused through diffraction gratings placed 360^{o} around the outer shell. In effect, a disk-shaped plane of x-ray wavelength radiation with a maximum effective radius of 1000 kilometers is instantly created. Any ICBM's passing into or through this plane will be destroyed. The NXL device must be launched, as opposed to space-based, because of the non-proliferation of nuclear weapons in space treaties. And though it is not a conventional nuclear bomb, it is the only nuclear-powered destructive weapon in the BMD System. There are many NXL modules available at several U.S. Launch Sites. However, the time-frame for use of these devices is limited and also there does exist a terrestrial risk-factor because of the relatively low altitudes involved and the danger of atmospheric radiation contamination over the United States. The proposal regards these weapons as a "last resort" option for use against ICBM's that have penetrated all the other defense mechanisms.

7. Anti-Space-Mine-Robots (ASM)

The exo-atmospheric maneuverable operational vehicles are equipped with limited-range pulse drivers and articulated rotating manipulators.

Video monitoring is accomplished with a fixed view, infinity focused camera mounted atop the vehicle facing forward. The LPD's fire a non-destructive pulse of thermal energy to deflect the path of a space mine away

from its potential target. The ARM is used in a situation of close proximity to BMD platforms on vehicles and can be effective in disarming or jamming space mines. Space mines are salvage-fused ("booby-trapped") and therefore use of the ARM is a high risk operation. There are ten ARM's deployed.

8. Decoy Deployment Detonators (D3)

Each BMD platform and vehicle carries a limited supply of D3 cartridges. The D3's are pumped out by electric solenoid-powered impulse and detonate at a range of 500-1500 meters, releasing a cloud of chaff (metal foil scraps) to obscure radar tracking for interceptors.

9. Multi-Track Thermal-Target Interceptor (MT3I)

The MT3I is an orbiting MV (miniature vehicle) launcher carrying sixteen non-nuclear interceptor rockets. The rockets are anti-interceptor interceptors and are ineffective against ballistic missiles. The MT3I's are maneuverable and rockets are targeted and fired by ground operators. There are twenty MT3I's in multiple low-earth orbits.

POLICY EVALUATION

Official policy governing the use of a Ballistic Missile Defense System states that any or all of the system components may be deployed, maintained, replaced and, within the restrictions of VST (Verifiable Space Test) guidelines, periodically tested. In peacetime mode (DefCon 5) no ASAT (Anti-Satellite) capability may be employed by the system with the single exception of ISM boundary ("Keepout Zones") enforcement.

During international crises situations (DefCon 4) BMD system components may be brought to full readiness in both firing capability and orbiting vehicle positioning. BMD system protection measures may be placed in stand-by mode and any countermeasures against the system may be responded to at the option of ground-based command and control. Any countermeasures taken to threaten the BMD system or any of its components will automatically escalate the situation to DefCon 3 status. DefCon 3 allows all military forces, conventional and nuclear, to be brought to full readiness and land, sea and air units to be mobilized to fail safe positions.

Any launch of ballistic missiles, automatically assumed to have nuclear warheads, detected by BMD or other surveillance networks will establish a DefCon 2 status. At DefCon 2 any action taken to defeat or destroy ballistic missiles launched against the United States or its territories or the territories of its allies will be at the sole discretion of HQ Command and Control and/or its authorized operators. Any ballistic missile/s entering the legal airspace of the United States or its allies will establish a DefCon 1 status. At DefCon 1 all military forces may be activated against the offending nation at the discretion of HQ Command and Control. BMD systems will continue to thwart any ballistic missile attacks and respond to ASAT countermeasures until a cessation of hostilities is formally observed.

COUNTERMEASURE ASSESSMENT

The Soviet response to BMD research, development and deployment by the United States has been a reevaluation of their ABM efforts in light of technological and strategic comparisons with results of concerted western initiatives and political and military objectives. The results of these studies has been an almost exclusive commitment to ASAT technology. The arsenal developed as of this date includes Orbiting Multiple Rocket Launchers (OMRL) that can disable or destroy BMD system components, Coorbital Satellite Interceptors (CSI) that are capable of targeting U.S. vehicles in orbits as high as 7000 kilometers. As land-launched, low-payload vehicles, several CSI's can be launched from multiple sites every hour. There is also evidence that some Soviet recon and communication satellites may be deceptively carrying explosive material, possibly nuclear. If so, these satellites pose a significant and virtually indefensible threat to BMD systems. Clearly designated spacemines are also ready for use as ASAT weapons. However, international agreements prohibit such devices in space as their purpose is inherently hostile. Tactically, spacemines would be put in orbit in anticipation of a strategic attack.

STATION DESCRIPTION

The single operator control station was designed to provide the BMD system with complete command and control facilities even if high-level command centers such as NORAD are disrupted. In the event that all HQ command links were broken, these independent operator stations can run the entire system as long as at least one microlink transmitting

station was on-line. The station is a computer terminal post that can be located at military installations, government facilities or even in private civilian residences.

THE CONTROL SCREEN

STATION STATUS -- Indicates if the station is active or inactive. An inactive station has no command, control or communications capability but does have access to some informational data sources. A station is activated by HQ Command. Active stations have full control of the BMD system within the directives of superior authority.

CHRONOMETER -- A realtime (local) clock set by the operator during initialization procedures.

MICROLINK STATION -- The currently transmitting communication station selected by the operator. One of eight stations, located in the continental U.S., must be on-line for satellite control to function.

DEFCON -- The current Defense Condition status as determined by HQ Command. Status significance is discussed in POLICY EVALUATION.

ALERT TIME -- A decrementing (countdown) chronometer that displays elapse time from detected ICBM launch to impact of U.S. soil. With multiple traces the timer reverts to the next earliest track.

TRACES -- The number of detected ICBM's inbound and on course. The tracking is continuous and missiles interfered with by BMD measures will be decremented from the count.

ONLINE -- Displays the designation of the component the operator is currently in contact with. Functioning components are available to the operator thru a single channel bounce-feed signal.

COM HQ -- Signals communications from HQ Command. This signal must be acknowledged by the operator within one minute or the station will be automatically deactivated.

DATA IN -- Indicates which side of the data disk is currently requested by internal systems.

VRS -- (Visual Reconnaissance Satellite) Displays the number of functioning surveillance satellites.

GCL -- (Ground-Based Chemical Laser) Displays the number of active facilities.

OLR -- (Orbiting Laser Reflectors) Displays the number of functioning units.

FEL -- (Free-Electron Laser) Displays the number of functioning platforms.

NPB -- (Neutral Particle Beam) Displays the number of functioning platforms.

EML -- (Electro-Magnetic Launcher) Displays the number of functioning platforms.

NXL -- (Nuclear-Pulsed X-ray Laser) Displays the number of units currently ready for launch.

SYS -- Displays a numeric as a diagnostic indicator of internal system conditions. 0000 shows no error status.

EXT -- Indicates if the terminal is on or off. If the terminal is off but the system is still active the operator must re-enter the access code to proceed.

CONTROL KEYS

RUN/STOP -- The terminal on/off switch.

C= -- This key gives the operator access to classified data regarding system operation.

RETURN -- This key enables the system to act on operator input.

F1 -- This is the NXL booster launch button. Following other setup procedures the NXL device is launched by the operator with this key.

F3 -- After booster launch this key will trigger detonation of the NXL device at the operator's discretion.

F5 -- Manual override. This switches control of certain weapon systems over to joystick operation and alternately switches back to automatic control.

F7 -- Returns the terminal monitor to the Control Screen from any display. Operator commands must be input to the Control Screen.

1. Initiate systems by loading terminal instructions from the Data disk (side 1).

   Method - Type: LOAD"DC",8,1 (RETURN)

   The system will enter STANDBY mode and then enter ENGAGED-READY mode.

2. Turn on the terminal (Run/Stop) to enter ACCESS mode.

3. Enter today's access code. The code can be any five digit alphanumeric combination (e.g. 56RD7, TM341, AAAA1, etc.) adopted by the operator following initial power-up of the system. The access code will remain the same until the system is shut down. This is a security measure to assure that only the original operator can gain access to the system if it should be temporarily turned off at the terminal. The code will be requested each time the terminal is turned on. The Control Screen will engage upon operator access.

4. Enter the current local time in four digits. The Chronometer reads military time (e.g. 00:00 - 23:59).

5. Enter the designation for the Microlink station closest to your geographic position. (Refer to MAP04.)

Command and request entries are made by typing the appropriate designation and pressing (RETURN). Designations are always five alphanumeric digits. For example, to access the map of microlink stations, which is designation MAP04, type MAP04 and press (RETURN). The map will appear on the

terminal monitor. (In some cases, there will be a DATA IN signal on the Control Screen indicating a system request of the data disk that must be acknowledged with a second press of the (RETURN) key.) Viewing MAP04 you will find a map of the continental U.S. with eight designations at different points. Locate the one nearest your location. This is the designation you should enter on the Control Screen. To return to the Control Screen press the F7 key.

Before the station can be activated, you must notify HQ Command by entering AA001 and pressing (RETURN). This will be acknowledged by HQ Command and your station will be activated.

INACTIVE INFORMATIONAL ACCESS DESIGNATION TABLES

INF01 -- VSR designations, orbits, timetables.

INF02 -- PEL designations, orbits, timetables.

INF03 -- NPB designations, orbits, timetables.

INF04 -- EML designations, orbits, timetables.

INF05 -- OLR designations, orbits, timetables.

INF06 -- ASM designations, orbtis, timetables.

INF07 -- MT3I designations, orbits, timetables.

INF08 -- GCL designations, locations, operation schedules.

INF09 -- NXL designations, launch sites, launch schedules.

OPERATIONAL MAPS ACCESS TABLES

MAP01 -- Western hemisphere plotting map.

MAP02 -- Eastern hemisphere plotting map.

MAP03 -- North American plotting map.

MAP04 -- Microlink transmitting station map.

MAP05 -- Soviet Union plotting map.

MAP06 -- Global satellite plot schematic.

MAP07 -- Polar plotting map.

VRS PRIME SITE DESIGNATION AND DESCRIPTION TABLE

(Refer to INF01.)

PL01 -- North polar region.

NE02 -- Near-East region.

EU03 -- Europe and the Mediterranean.

NA04 -- Eastern Canada and United States.

NA05 -- Southeastern United States and Cuba.

CA06 -- Central America.

US07 -- Southwestern United States.

NA08 -- Western Canada and United States.

BS09 -- U.S.S.R. and Alaska.

ER10 -- Eastern Russia.

SA11 -- Southeast Asia.

SU12 -- Western Soviet Union.

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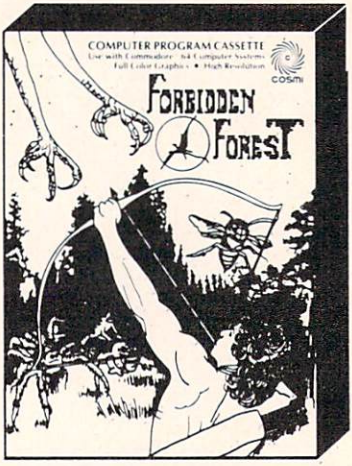

Zounds! And gadzooks! You were just out to do a little target practice with your bow and arrow when you lost your way. Now the moon is coming out and it's getting darker; the forest is getting more ominous and there are some strange rustling noises coming from the bushes. Egad! You have mistakenly wandered into the "Forbidden Forest!" Only your skill as an archer can protect you now. Here they come! Giant spiders, an enormous bumble bee, huge leaping frogs, a fire breathing dragon, a phantom protected by killer skeletons, an 80 foot snake and, finally, the ghost demogorgon who only appears during flashes of lightning that herald the coming storm. Move quickly, aim accurately, destroy the monsters and you just may escape from the "Forbidden Forest."

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